

TECHNICAL INFORMATION AND SERVICE DATA

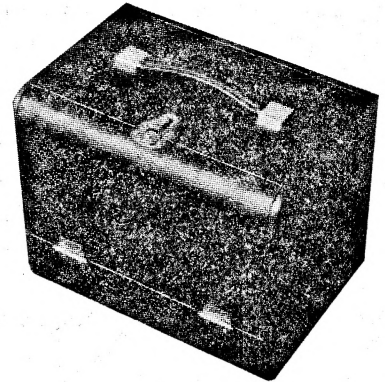


RADIOLAS

PORTABLE MODELS 451-P & 451-PZ
FIVE VALVE, BROADCAST, BATTERY OPERATED
SUPERHETERODYNES

INCORPORATING DATA ON CHRYSLER-DODGE-DE SOTO
 RECEIVER MODEL C.D.D.3.

ISSUED BY
AMALGAMATED WIRELESS (A/SIA.) LTD.



ELECTRICAL SPECIFICATIONS.

FREQUENCY RANGES:

Medium Wave 540-1600 Kc/s (555-187.5 M.)

UNDISTORTED POWER OUTPUT 200 milliwatts
 on "Full Battery."

INTERMEDIATE FREQUENCY 455 Kc/s

BATTERY VOLTAGES:

"A" Battery 1.5 volts

"B" Battery 90 volts

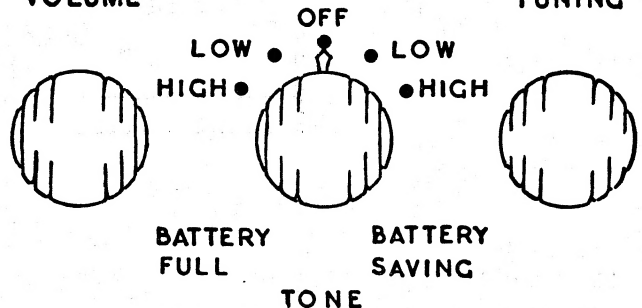
CONTROLS:

BATTERY CONSUMPTION:

"A" Battery 300 mA.

"B" Battery .. "Bty. Full," 14 mA., "Bty. Saving," 9 mA.

VOLUME



LOUDSPEAKER:

5 inch Permanent Magnet—Code No. AC32.

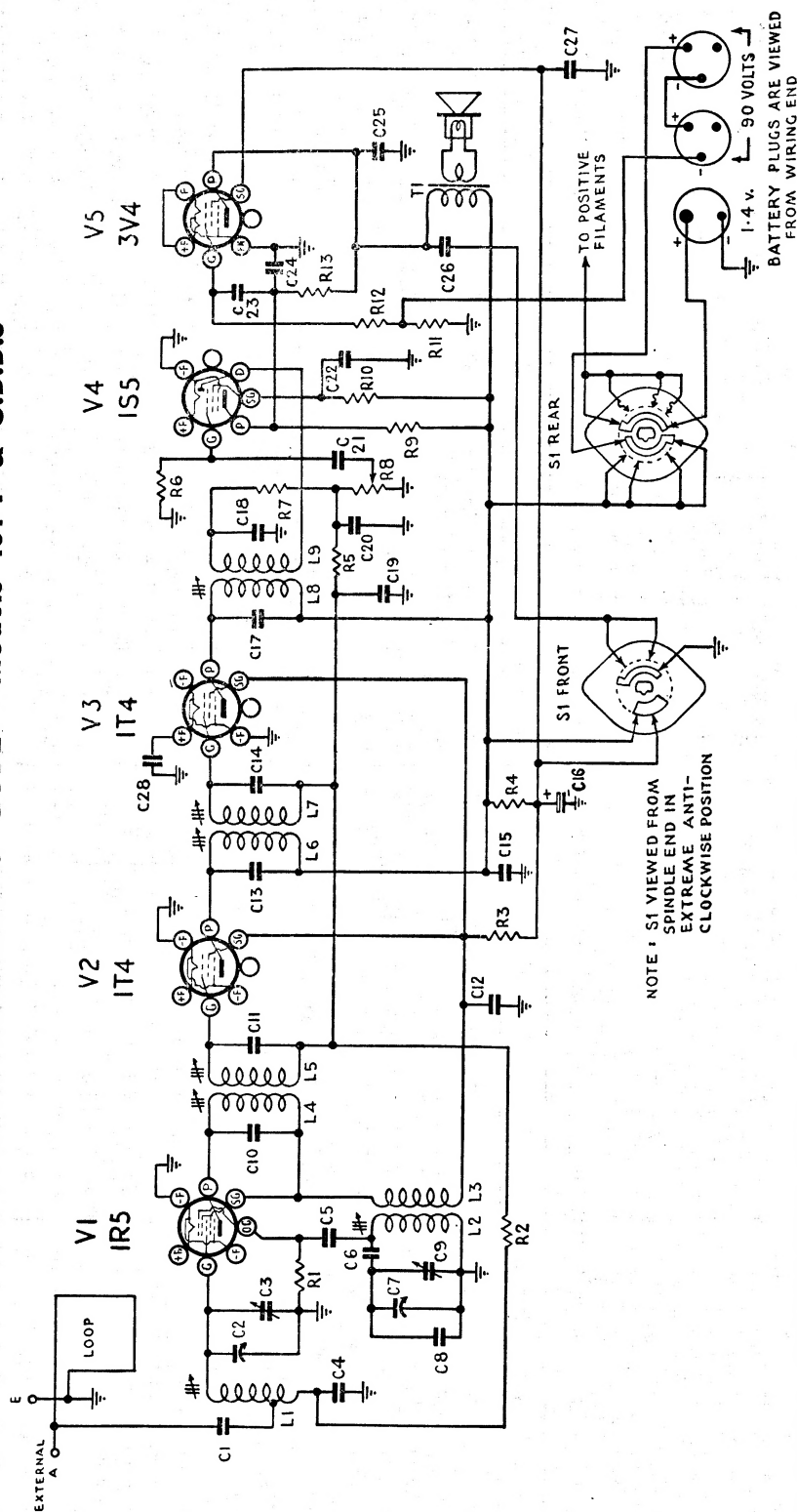
Transformer—XA8.

V.C. Impedance—3 ohms at 400 C.P.S.

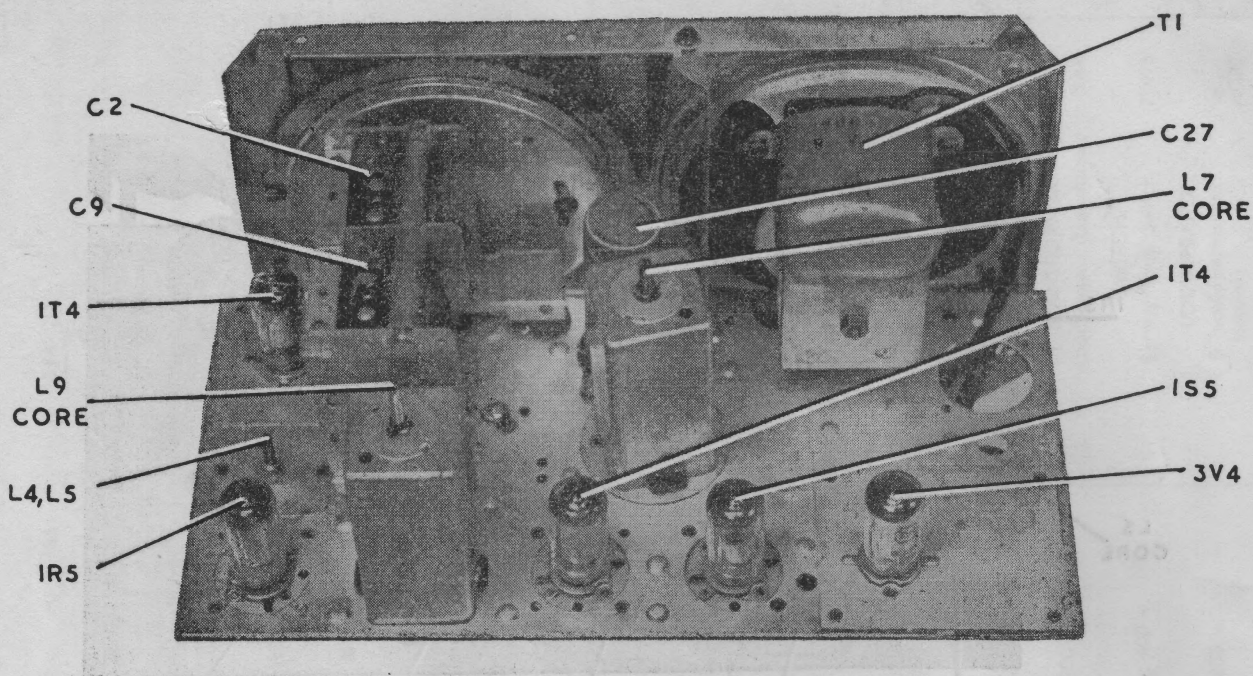
MECHANICAL SPECIFICATIONS.

	Height.	Width.	Depth.
Cabinet Dimensions (inches)	10½	12½	8½
Chassis Base Dimensions (inches) ..	2½	11	5½

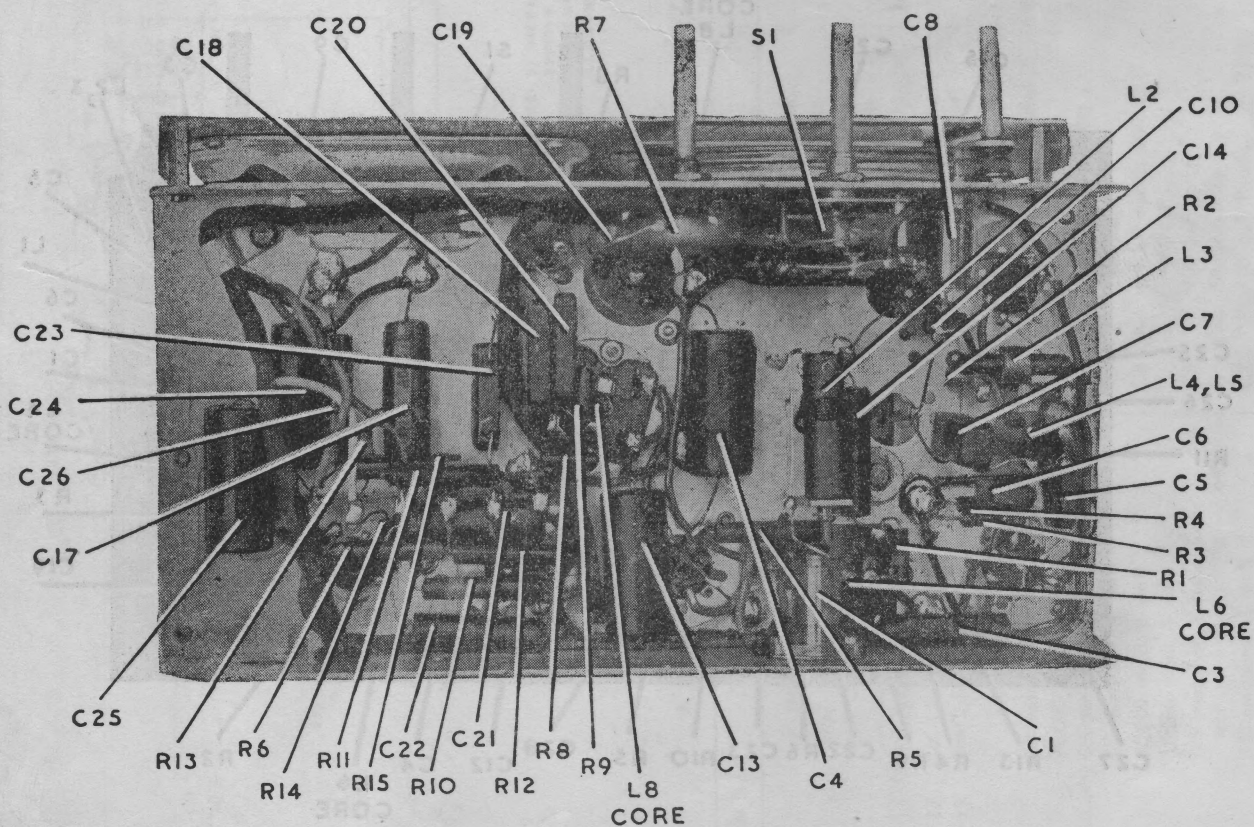
	Height.	Width.	Depth.
Carton Dimensions (inches)	11	13	9
Weight (nett lbs.)	19 lbs. complete with batteries		



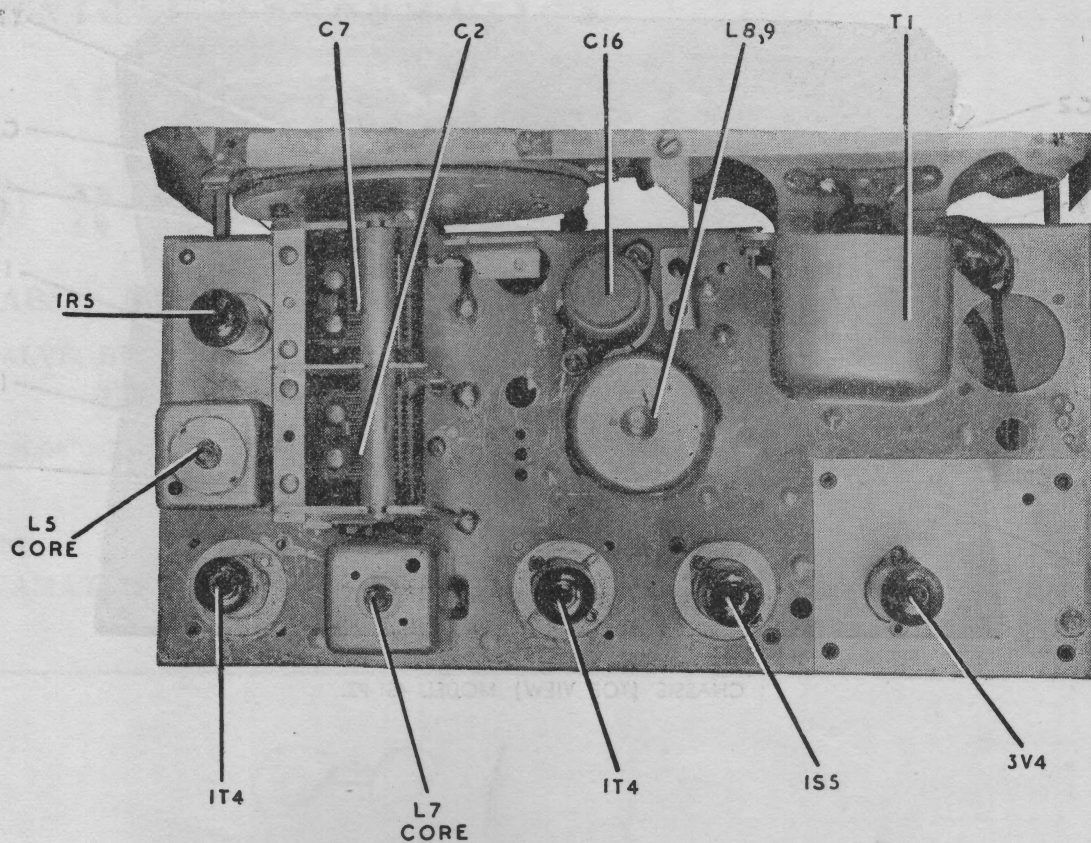
Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.
L1	INDUCTORS.										
L2, L3	Aerial Coil	20711	R11	400 ohms, $\frac{1}{2}$ watt		C12	0.4 uF paper, 200 v.		C23	0.025 uF paper, 400 v.	
L4, L5	Oscillator Coil	7638	R12	1 megohm, $\frac{1}{2}$ watt		C13	working		C24	100 uuF mica	
L6, L7	1st I.F. Transformer	22416	R13	3.2 megohms, 1 watt		C14	70 uuF mica		C25	0.0025 uF paper, 600 v.	
L8, L9	2nd I.F. Transformer	22416		CAPACITORS.		C15	70 uuF mica			working	
	3rd I.F. Transformer	15483	C1	0.05 uF paper, 200 v.		C16	0.1 uF paper, 200 v.		C26	0.025 uF paper, 400 v.	
	RESISTORS.			working		C17	working			working	
R1	0.1 megohm, $\frac{1}{2}$ watt		C2	12-430 uuF tuning	15686	C18	20 uF 200 P.V. electrolytic		C27	0.005 uF paper, 600 v.	
R2	0.1 megohm, $\frac{1}{2}$ watt		C3	3-25 uuF air trimmer	16959	C19	70 uuF mica			working	
R3	25,000 ohms, 1 watt		C4	0.05 uF paper, 200 v.			100 uuF mica (in 3rd I.F. Assy.)		C28	0.4 uF paper, 200 v.	
R4	10,000 ohms, 1 watt			working			0.05 uF paper, 200 v.			working	
R5	2.5 megohms, $\frac{1}{2}$ watt		C5	50 uuF mica		C20	working			TRANSFORMER.	
R6	10 megohms, 1 watt		C6	470 uuF padder			100 uuF mica (in 3rd I.F. Assy.)		T1	Loudspeaker Transformer	XA8
R7	20,000 ohms, $\frac{1}{2}$ watt		C7	12-430 uuF tuning	15686	C21	working			SWITCH.	
	(in 3rd I.F. Assy.)		C8	14 uuF mica			0.025 uF paper, 400 v.		S1	Battery/Tone Switch	22426
R8	0.5 megohm, Volume Control		C9	3-25 uuF air trimmer	16959	C22	working			LOUDSPEAKER.	
R9	1 megohm, 1 watt	6491	C10	70 uuF mica			0.1 uF paper, 200 v.			5 inch (permanent Magnet)	AC32
R10	3.2 megohms, 1 watt		C11	70 uuF mica			working				



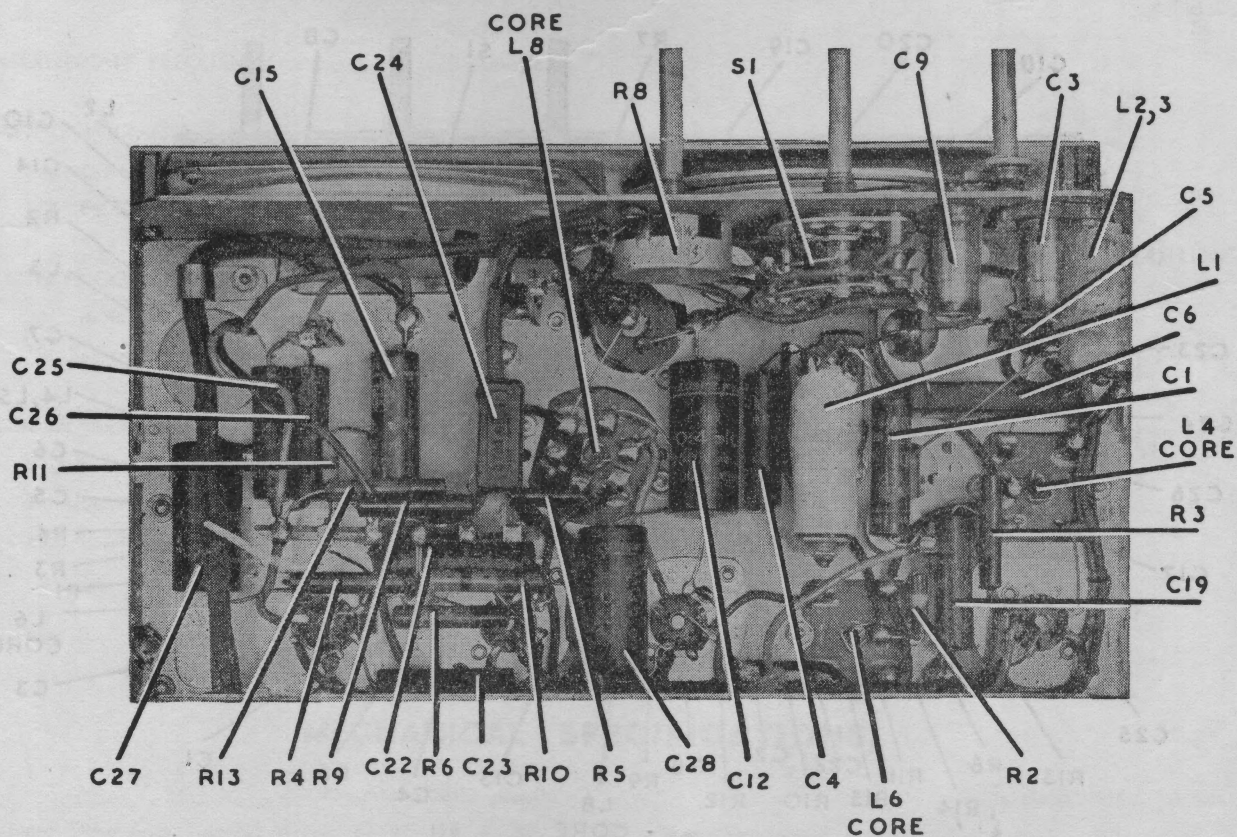
CHASSIS (TOP VIEW) MODEL 451-PZ.



CHASSIS (UNDERNEATH VIEW) MODEL 451-PZ.



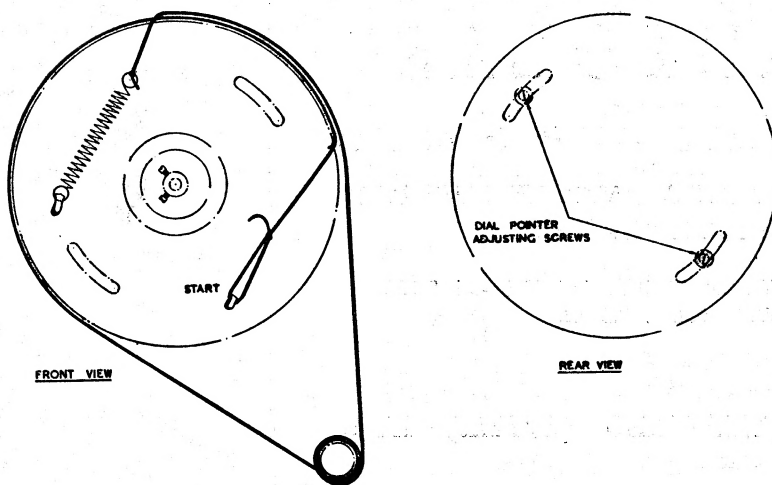
CHASSIS (TOP VIEW) MODEL 451-P and C.D.D.3.



CHASSIS (UNDERNEATH VIEW) MODEL 451-P and C.D.D.3.

Dial Pointer Adjustment.

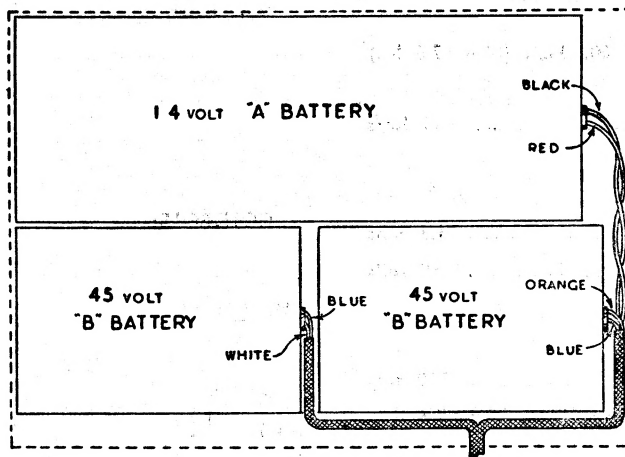
To shift the position of the dial pointer, loosen two screws in the rear of the drive drum—see accompanying diagram—move the drum to the required position and re-tighten the screws.



GENERAL DESCRIPTION.

The Models 45I-P, C.D.D.3 and 45I-PZ are portable models and are housed in cases attractively finished in weatherproof baggage cloth. They embody a hinged cover, which effectively protects the dial and controls from damage, dust or weather.

Features of design include: Tropic-proof construction, automatic volume control, magnetite cores in I.F. transformers, oscillator coil and aerial coils, air-dielectric trimming capacitors.



ALIGNMENT PROCEDURE.

Manufacturers' Setting of Adjustments.

The receiver is tested by the manufacturers with precision instruments, and all adjusting screws are sealed. Re-alignment should be necessary only when components in tuned circuits are repaired or replaced, or, when it is found that the seals over the adjusting screws have been broken.

It is especially important that the adjustments should not be altered unless in association with the correct testing instruments listed below.

Under no circumstances should the plates of the ganged tuning capacitor be bent, as the unit is accurately aligned during manufacture and cannot be re-adjusted unless by skilled operators using specialised equipment.

For all alignment operations, except aerial stage, connect the "low" side of the signal generator to the receiver chassis and keep the generator output as low as possible to avoid A.V.C. action. Also, keep the volume control in the maximum clockwise position.

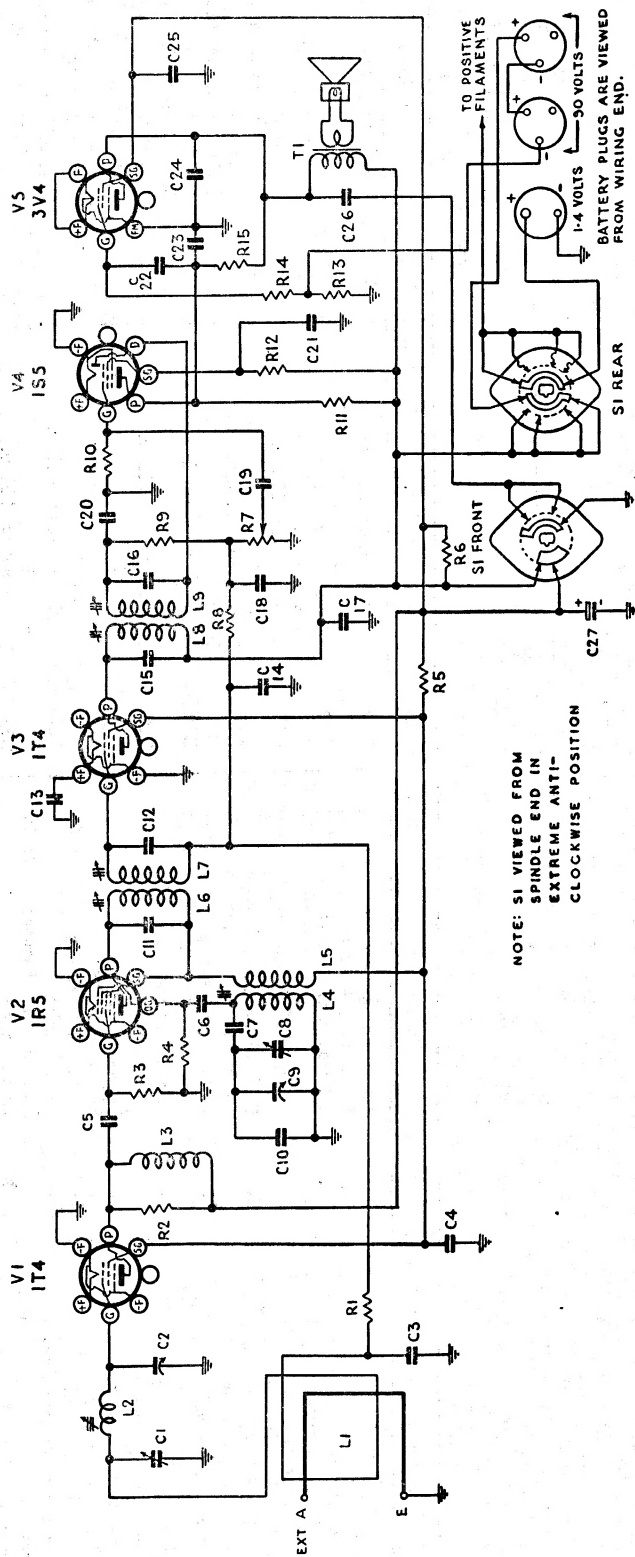
Testing Instruments.

- (1) A.W.A. Junior Signal Generator type 2R3911.
- or
- (2) A.W.A. Modulated Oscillator type J6726.

If the modulated oscillator is used, connect an 0.25 megohm non-inductive resistor across the output terminals.

- (3) A.W.A. Output Meter Type 2M8832.

CIRCUIT DIAGRAM & CODE — Model 451-PZ



A Neutralizing Capacitor (C28) has been incorporated in Model 451-PZ. It is connected between the plate of V3 (1T4) and the junction of C14 and R8.

Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.
INDUCTORS.			R9	20,000 ohms, $\frac{1}{2}$ watt		C8	3-25 uuF Air Trimmer	16959	C22	0.025 uF paper, 400 v.	
L1	Aerial Coil Loop		R10	10 megohms, 1 watt		C9	12-430 uuF Tuning	16615	C23	100 uuF mica	
L2	Loop Coupling Coil	22719	R11	1 megohm, 1 watt		C10	14 uuF mica		C24	0.0025 uF paper, 600 v.	
L3	Compensating Coil	22720	R12	3.2 megohms, 1 watt		C11	70 uuF mica		C25	0.4 uF paper, 200 v.	
L4, L5	Oscillator Coil	20741	R13	400 ohms, $\frac{1}{2}$ watt		C12	70 uuF mica		C26	0.025 uF paper, 400 v.	
L6, L7	1st I.F. Transformer	22700	R14	1 megohm, $\frac{1}{2}$ watt		C13	0.4 uF paper, 200 v.		C27	20 uF 200 P.V. Electrolytic	
L8, L9	2nd I.F. Transformer	22703	R15	3.2 megohms, 1 watt		C14	0.01 uF paper, 600 v.		C28	9 uuF mica (neutralizing)	
RESISTORS.			CAPACITORS.			C15	70 uuF mica		TRANSFORMER.		
R1	0.1 megohm, $\frac{1}{2}$ watt		C1	3-25 uuF Air Trimmer	16959	C16	70 uuF mica		T1	Loudspeaker Transformer	XA8
R2	10,000 ohms, 1 watt		C2	12-430 uuF Tuning	16615	C17	0.1 uF paper, 200 v.		SWITCH.		
R3	0.5 megohm, $\frac{1}{2}$ watt		C3	0.05 uF paper, 200 v.			working		S1	Battery/Tone Switch	22426
R4	0.1 megohm, $\frac{1}{2}$ watt		C4	0.4 uF paper, 200 v.		C18	100 uuF mica		LOUDSPEAKER.		
R5	10,000 ohms, 1 watt			working		C19	0.025 uF paper, 400 v.		5 inch (permanent magnet)		
R6	10,000 ohms, 1 watt		C5	100 uuF mica		C20	100 uuF mica				
R7	0.5 megohm, Volume Control	6491	C6	50 uuF mica		C21	0.1 uF paper, 200 v.				
R8	2.5 megohms, $\frac{1}{2}$ watt		C7	470 uuF Padder, $\pm 2\frac{1}{2}\%$			working				

ALIGNMENT TABLE — Models 451-P & C.D.D.3

Order.	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver Dial to:	Adjust for maximum peak output.
1	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L8 (core)
2	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L7 (core)
3	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L6 (core)
4	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L5 (core)
5	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L4 (core)
Repeat above adjustments until the maximum output is obtained.				
6	* Inductively coupled to loop	540 kc/s	540 kc/s	L.F. Osc. Core Adj. (L2)
7	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C9)
8	* Inductively coupled to loop	600 kc/s	600 kc/s	L.F. Aerial Core Adj. (L1)
9	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Aerial Adj. (C3)

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument and placed flat against the loop.

ALIGNMENT TABLE — Model 451-PZ

Order.	Connect "high" side of generator to:	Tune generator to:	Tune receiver Dial to:	Adjust for maximum peak output:
1	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L9 (core)
2	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L8 (core)
3	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L7 (core)
4	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L6 (core)
Repeat above adjustments until the maximum output is obtained				
5	Aerial section of gang (front portion)	540 kc/s	540 kc/s	L.F. Osc. Core Adj. (L4)
6	Aerial section of gang (front portion)	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C8)
7	* Inductively coupled to loop	600 kc/s	600 kc/s	L.F. Aerial Core Adj. (L2)
8	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Aerial Adj. (C1)

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument and placed co-axial with the loop and distant not less than 1 foot from it.

SOCKET VOLTAGES — Models 451-P & C.D.D.3

Valves.	Bias Volts.		Screen Grid to Chassis Volts.		Anode to Chassis Volts.		Anode Current mA.		Filament Volts.	
	FB*	BS*	FB	BS	FB	BS	FB	BS	FB	BS
IR5 Converter	0	0	33†	25†	33†	25†	0.4	0.2	1.4	1.4
IT4 I.F. Amplifier	0	0	33†	25†	85	87	1.1	0.7	1.4	1.4
IT4 I.F. Amplifier	0	0	33†	25†	85	87	1.1	0.7	1.4	1.4
IS5 Detector	0	0	10†	10†	10†	10†	0.1	0.1	1.4	1.4
3V4 Output	-5.5	-3.5	85	60†	80	83	7.5	5.0	1.4	1.4

* FB = Full battery position of Battery/Tone Switch.

BS = Battery saving position of Battery/Tone Switch.

Measured with no signal input.

† These readings may vary depending on the resistance of the voltmeter used.

SOCKET VOLTAGES — Model 451-PZ

Valves.	Bias Volts.		Screen Grid to Chassis Volts.		Anode to Chassis Volts.		Anode Current mA.		Filament Volts.	
	FB†	BS†	FB	BS	FB	BS	FB	BS	FB	BS
IT4 R.F. Amp.	0	0	45	30	84.5	86.5	1.7	0.7	1.4	1.4
IR5 Converter	0	0	45	30	45	30	0.5	0.2	1.4	1.4
IT4 I.F. Amp.	0	0	45	30	84.5	86.5	1.7	0.7	1.4	1.4
IS5 Det., A.F. Amp. A.V.C.	0	0	25*	25*	30*	30*	0.07	0.07	1.4	1.4
3V4 Output	-5.5	-3.5	84.5	45	81	85	7.5	5.0	1.4	1.4

† FB = Full Battery position of Battery/Tone Switch.

BS = Battery Saving Position of Battery/Tone Switch.

* = Calculated from measured current. An ordinary voltmeter will register a lower value.
Measured with no signal input.

MECHANICAL REPLACEMENT PARTS

Item.	Part No.	Item.	Part No.
Cabinet	C80	Dial Scale, Model 451-P, 451-PZ: 21912, 22682 or 23300	
Cabinet back	22429	Model C.D.D.3	21844 or 23329
Cable, battery	20713	Drum, drive assembly	20130
Cable, volume control	20712	Knob, assembly	22433
Chassis end—		Knob	17603
Right-hand	22417	Socket, valve	19965
Left-hand	20124	Strip tag, 1 way	7628
		6 way	22423

D.C. RESISTANCE OF WINDINGS.

Winding.	D.C. Resistance in ohms.
Aerial Coil (451-P, C.D.D.3 only)	4
Tapped Portion	*
Aerial Coupling Coil (451-PZ only)	*
Oscillator Coil—	
Primary	3
Secondary	8
I.F. Transformer Windings—	
1st and 2nd I.F.	10
3rd I.F. (451-P, C.D.D.3 only)	20
Loudspeaker Input Transformer—	
XA8 Primary	425 or 510
Secondary	*

* Less than 1 ohm.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations and it should not be assumed that a component is faulty if a slightly different reading is obtained.